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(54) **Double wall container**

Doppelwandbehälter

Recipient à double paroi

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Description

[0001] The present invention relates to a container according to the preamble part of claim 1.

[0002] The general problem of the hot beverage cups in PE cardboard is that of the outside temperature of the cup, excessive with respect to human bearableness limits (empirically assessed to be around 60°C). The hot beverage (coffee, tea, cocoa, etc.) is commonly served at a temperature ranging from 80°C to 95°C.

[0003] Notwithstanding the marked thickness of the materials used for this type of cup, the outside temperature of the cup readily (in 30 seconds, max. 1 minute) reaches >80°C values (when the beverage is served at 95°C). At +10 minutes the outside temperature is still >75°C.

[0004] The phenomenon is worsened by the fact that usually the cup is provided with a lid which markedly reduces steam outlet, hence retaining heat for a longer time.

[0005] An empirical method for partially overcoming the problem is that of serving the beverage in two stacked cups. The outside one is dispensed for free and constitutes a support of the inside one, which contains the beverage.

[0006] The temperature at the hand decrease, however maintaining >70°C values for the initial 6 minutes or so, hence proving unacceptable. Moreover, also the cost of manufacturing and dispensing two cups entirely mould-formed for an individual client should be taken into account.

[0007] Various attempts to enhance the level of thermal insulation have been made, among which the couplings of the cups with outside skirts in creased materials, of various shapes and dimensions, pre-assembled or coupled upon serving the beverage, are well-known.

[0008] Such outside skirts tend to reduce the contacting surface between the outside wall of the cup and the inside wall of the skirt and, therefore, the heat transfer.

[0009] Moreover, versions do exist wherein the creased portion lies on the inside (less contact with the cup) or on the outside (lessor contact with the fingers). However, when serving that beverages usually the outside temperature remains at >65°C for at least the first 6 minutes. Further the appearance (mouldability, appeal) of the container is anyhow comprised.

[0010] The sole invention truly meeting the requirement of maintain a $\leq 60^\circ\text{C}$ temperature is polystyrene foam, which however is of quite scanty mouldability and unpleasant to contact with the user's lip.

[0011] A type of cup provided with a wall having three layers, the intermediate thereof being creased, is known from US-A-5,542,599. However, the thermal insulation value thereof is still ineffective (>70°C temperature), and the cup is complicated and costly to manufacture.

[0012] A container according to the preamble part of claim 1 is known from DE-A-198 40 841. The upper end region of the outside skirt is connected to the advanta-

geously rigid container top edge region by gluing or sealing with the free outside skirt edge clamped between the container top edge section and the knurled upper container bead. Due to the formation of the groove with the inwardly protruding step below the top edge section of the container wall an insulating spacing is provided between the outside skirt and the container wall. The outside skirt extends over the entire length of the container wall. The lower rim of the outside skirt is rolled around a bottom flange of the container. Between the container wall and the outside skirt either an outwardly bent part of the bottom of the container or an outwardly bent part of the container wall is situated as an additional spacer. The inwardly rolled outer skirt rim is attached to the container bottom structure. The outside skirt can be prefabricated only partially, because the rolling procedure of the lower outside skirt rim and the attachment of the outside skirt rim on the bottom structure needs additional manufacturing steps. The outside skirt fully covering the container hides the double wall concept of the container. The direct connection between the lower outside skirt rim and the bottom structure of the inner container creates an undesirable heat bridge such that the lower region of the outside skirt heats up relatively rapidly when hot liquid fills the container. A major advantage of having the groove forming the inwardly protruding step in the upper container edge section is increased rigidity in the upper container edge section and a well defined insulating spacing between the inner container wall and the outside skirt in the lower part of the container.

[0013] The insulating container of EP-A-10 31 514 is fabricated by combining an inner prefabricated paper container and a prefabricated outside skirt. The upper sharp or inwardly rolled rim of the outside skirt is set below the curled bead of the inner container. The skirt extends over the full height of the container. A lower, inwardly rolled rim of the outside skirt rests on the container wall in the bottom region of the container. Outwardly creased, circumferential grooves in the container wall contact the outside skirt. The outside skirt is attached e.g. by gluing or sealing in at least on the of the circumferential contact zones to the container. The contact zones create undesirable heat bridges and insulation separation webs in the middle region of the height of the container such that the outside skirt tends to locally heat up relatively rapidly when the container is filled with hot liquid.

[0014] Therefore, the object of the present invention is to eliminate the above-mentioned drawbacks of the beverage containers and cups of the state of the art by providing a "laminated container", having an outside skirt, side heat-sealed like in cups, but bottomless with an inwardly bent rim in the bottom section thereof. A particular object of the present invention is to provide a container of a double wall type which is easy to manufacture for fair costs, has an attractive appearance and assures improved insulation.

[0015] Since the outside skirt only rests with the lower

inwardly bent rim on the outside of the inner container wall, the inner container and the outside skirt both can be completely prefabricated. It is only necessary to put the outside skirt on to the inner container and to attach the outside skirt at the upper container edge section. The container then is ready for use. Since the outside skirt is shorter than the entire height of the inner container such that the lower outside skirt rim rests on the inner container wall at a higher elevation than the height of the bottom, the appearance of the container is attractive and directly indicates the double wall structure. Furthermore, the short outside skirt allows to save material. An important aspect is that the lower outside skirt rim only resting on the inner container wall does not create a direct heat bridge such that the lower part of the outside skirt does not heat up rapidly. Of importance is further that the position of the outside skirt lower rim higher than the bottom of the container allows to achieve a short stacking height of several of such containers.

[0016] Furthermore, the present invention provides a container for beverages or the like comprising a body having a wall, characterised in that it further comprises an outside skirt apt to near-totally coat said wall, the former being fixedly arranged onto said body and externally to the latter and kept spaced therefrom with a groove obtained at the top area of the container and with a bottom edge obtained on said skirt apt to rest onto the wall.

[0017] The container being further characterised in that it has an annular groove obtained onto the wall and projecting internally to the container, the groove being apt to provide a support for a respective bottom edge of a skirt of a related container, rising thereabove when in a stacked condition.

[0018] A detailed description of some preferred embodiments of the container of the present invention, given by way of example and not for limitative purposes, will hereinafter be provided. Reference will be made to the annexed drawings, wherein:

figure 1 is a partially sectional perspective view of the container of the present invention according to a first embodiment thereof;

figure 2a is a partially sectional view of a detail of the container of the present invention of figure 1;

figure 2b is a partially sectional view of a further detail of the container of the present invention of figure 1;

figure 3 is a partially sectional perspective view of the container of the present invention according to a second embodiment thereof;

figure 4 is a partially sectional view of a detail of the container of the present invention of figure 3;

figure 5 is a partially sectional perspective view illustrating two containers of the present invention in a stacked condition; and

figure 6 is a partially sectional view illustrating a detail of the containers of figure 3.

[0019] With reference now to figure 1, a cup 1 having an outside skirt 2 whose spacing from the inside wall 3 of the cup gradually increases bottomwise is shown.

[0020] According to the present invention, the spacing between the cup 3 and the outside skirt 2 is maintained substantially and almost constant, by means of forming a "step shaped" groove onto the inside cup. The outside skirt 2 contacts the cup wall 3 at a markedly narrowed area, the area being not lapped by the stationary liquid (the filling mark being provided at a lower height). Below the groove 4 the skirt 2 never comes into contact with the inside wall cup, provided a material of suitable rigidity is selected, therefore air that gap is preserved. The air gap thus formed creates an effective thermal insulation for the hot or cool product contained therein.

[0021] Hence, according to the container of the present invention, when a hot beverage is contained therein the outside temperature of the skirt is always maintained at $\leq 60^{\circ}\text{C}$. Moreover, by virtue of the particular embodiment, the product is easily mouldable and easily decorated, as well as of pleasant appearance, both to the touch and visually.

[0022] With reference now to figures 3 and 4, a second embodiment of the container of the present invention is provided, wherein the outside skirt 2 is maintained spaced from the inside wall 3 at the top section of the container by obtaining a perimetral groove 7 during the cup mould-forming stage. This solution allows to maintain the skirt 2 spaced from the wall 3, differing from the abovedisclosed embodiment in that the outside skirt 2 is not parallelly arranged onto the wall 3 of the container, rather having a divergence starting from above the wall 3 and gradually straying therefrom by means of the groove 7 and of the bottom edge 5.

[0023] With reference now to figure 2a and according to the above disclosed embodiments of the container of the present invention, it is provided that the outside skirt 2 have the end flange 5 not at the same height of the bottom. The former is shorter than the whole height of the container wall, in order to make apparent the skirt-inside cup slack, thereby better setting off the product.

[0024] However, such a difference in height prevents the user from touching the scalding region, and a 1-2 mm difference spacing from the height of the cup bottom is provided therefor. This improvement, besides highlighting the presence of a double layer, reduces the paper consumption for the skirt.

[0025] On the other hand, according to the material and to the specific use, in order to reduce the stacking pitch of the cups, it is provided that the rounded edge 5 of the skirt 2 may be 'flattened' during the forming thereof with an additional step in the manufacturing process of the container.

[0026] More precisely, when the outside edge 5 of the skirt 2 has a perfectly rounded shape and during the stacking of a container onto another one, the edge 5 comes much sooner into contact with the inside wall 3 of the subsequent cup, elevating the stacking heights

from average values of 6-10 mm for single-skirt cups to 26-30 mm. All this adversely affects handling.

[0027] Therefore, according to a further embodiment of the container of the present invention, the container may have a edge 5 flattened onto the skirt 2. This solution anyhow allows to preserve an air gap of about 1.2 mm, to ensure a level of thermal insulation, and a stacking height improved of about 6-8 mm with respect to the double wall containers of the state of the art.

[0028] On the other hand, it was found that the flattening of the flange further prejudices the stackability of a container into another one, as it eases the sticking up of two cups one inside the other, since the tapers of the outside skirt 2 and of the inside wall 3 of the cup tend to become equivalent.

[0029] To this end, as it is apparent in figures 1 and 5, perimetral grooves 8 in the longitudinal direction and at the bottom section of the skirt 2 may be obtained, so as to avoid a "suction effect" making it difficult to detach one container from another.

[0030] Alternatively, and with particular reference now to figure 6, according to the present invention it is provided that an annular groove 6 be obtained onto the inside wall 3 of the container during the initial mould-forming step of the container. The groove 6 is apt to provide a support for the edge 5 of a skirt of a cup when in the stacked condition.

[0031] To obtain the groove 6 two alternative processes, already object of patent application by the present applicant, may be provided. More precisely, according to a first process, firstly a plane blank apt to make said container 1 once assembled is provided. The blank has an outside surface 2 and an inside surface 3. Then, it is provided that onto the surface 3 the creasing 6, apt to project internally to the container once assembled, be obtained.

[0032] Alternatively, a second process for implementing the container 1 of the present invention, wherein the pre-process blank be plain, may be provided. Then, the latter is arranged on a revolving supporting member of a mould-forming apparatus. The revolving supporting member has on the surface thereof a perimetral groove apt to obtain a respective creasing 6 onto the surface 3 of the container 1 when the supporting member engages to a complementary outside knurl.

Claims

1. Container (1) for beverages or the like, comprising an inner cup-shaped main body including

an inner conical wall (3),

a groove (4) forming an inwardly protruding step below a top edge section of the container wall (3),

an outwardly knurled container rim defining the upper end of the container top edge section, and

a container bottom,

further comprising a conical outside skirt (2) connected to the container top edge section and extending downwardly along the container wall (3) with a spacing between the outside skirt (2) and the container wall (3), the outside skirt ending at a lower inwardly bent rim (5), **characterised in that**

the outside skirt (2) is shorter than the whole height of the container wall (3), and that the inwardly bent skirt rim (5) rests on the container wall (3) at a region situated at a higher elevation than the container bottom, to provide a height difference between the height of the container bottom and the height of the inwardly bent skirt rim (5).

2. Container as in claim 1, **characterised in that** the outside skirt (2), where connected to the container top edge region, contacts the container wall (3) in a markedly narrowed area.
3. Container as in claim 1, **characterised in that** the height difference between the inwardly bent skirt rim (5) and the container bottom is about 1 mm to 2 mm.
4. Container as in claim 1, **characterised in that** the container wall (3) is provided with a slack inside the inwardly bent skirt rim (5).
5. Container as in claim 1, **characterised in that** the spacing between the outside skirt (2) and the container wall (3) is of essentially constant width or of downwardly decreasing width.
6. Container as in claim 1, **characterised in that** the container wall (3) is formed with an inwardly projecting supporting means (6) for a respectively inwardly bent skirt rim (5) of a related container (1) in stacked condition, the supporting means (6) preferably being an annular groove, and that the supporting means (6) is provided higher up inside the container wall (3) than where the inwardly bent skirt rim (5) rests on the container wall (3) from the outer side.
7. Container as in claim 1, **characterised in that** the inwardly bent skirt rim (5) has a round shape.
8. Container as in claim 1, **characterised in that** the inwardly bent skirt rim (5) is flattened to preserve a spacing width of about 1.2 mm.

Patentansprüche

1. Behälter (1) für Getränke oder dergleichen, der einen inneren tassenförmigen Hauptkörper umfasst, der enthält:
 - eine innere konische Wand (3),
 - eine Nut (4), die einen nach innen vorstehenden Absatz unter einem oberen Randabschnitt der Behälterwand (3) bildet,
 - einen nach außen gerändelten Behälterrand, der das obere Ende des oberen Randabschnitts des Behälters bildet, und
 - einen Behälterboden,
 wobei er des Weiteren einen konischen Außenmantel (2) umfasst, der mit dem oberen Randabschnitt des Behälters verbunden ist und sich an der Behälterwand (3) entlang mit einem Zwischenraum zwischen dem Außenmantel (2) und der Behälterwand (3) nach unten erstreckt, wobei der Außenmantel an einem unteren, nach innen gebogenen Rand (5) endet, **dadurch gekennzeichnet, dass:**
 - der Außenmantel (2) kürzer ist als die gesamte Höhe der Behälterwand (3) und der nach innen gebogene Rand (5) des Mantels an der Behälterwand (3) in einem Bereich anliegt, der höher liegt als der Behälterboden, so dass ein Höhenunterschied zwischen der Höhe des Behälterbodens und der Höhe des nach innen gebogenen Randes (5) des Mantels vorhanden ist.
2. Behälter nach Anspruch 1, **dadurch gekennzeichnet, dass** der Außenmantel (2) dort, wo er mit dem oberen Randabschnitt des Behälters verbunden ist, mit der Behälterwand (3) in einem erheblich verschmälerten Bereich in Kontakt kommt.
3. Behälter nach Anspruch 1, **dadurch gekennzeichnet, dass** der Höhenunterschied zwischen dem nach innen gebogenen Rand (5) des Mantels und dem Behälterboden ungefähr 1 mm bis 2 mm beträgt.
4. Behälter nach Anspruch 1, **dadurch gekennzeichnet, dass** die Behälterwand (3) innerhalb des nach innen gebogenen Randes (5) des Mantels locker ist.
5. Behälter nach Anspruch 1, **dadurch gekennzeichnet, dass** der Zwischenraum zwischen dem Außenmantel (2) und der Behälterwand (3) im Wesentlichen konstante Breite oder nach unten abnehmende Breite hat.

6. Behälter nach Anspruch 1, **dadurch gekennzeichnet, dass** die Behälterwand (3) mit einer nach innen vorstehenden Trageinrichtung (6) für einen entsprechend nach innen gebogenen Rand (5) des Mantels eines dazugehörigen Behälters (1) im gestapelten Zustand versehen ist, wobei die Trageinrichtung (6) vorzugsweise eine ringförmige Nut ist, und dadurch, dass die Trageinrichtung (6) über der Stelle im Inneren der Behälterwand (3) vorhanden ist, an der der nach innen gebogene Rand (5) des Mantels von der Außenseite her an der Behälterwand (3) anliegt.
7. Behälter nach Anspruch 1, **dadurch gekennzeichnet, dass** der nach innen gebogene Rand (5) des Mantels eine runde Form hat.
8. Behälter nach Anspruch 1, **dadurch gekennzeichnet, dass** der nach innen gebogene Rand (5) des Mantels abgeflacht ist, um eine Abstandsweite von ungefähr 1,2 mm zu erhalten.

Revendications

1. Récipient (1) pour boissons ou similaire, comprenant un corps principal interne en forme de gobelet comprenant
 - une paroi interne conique (3),
 - une rainure (4) formant un cran faisant saillie vers l'intérieur en dessous d'une zone de bord supérieur de la paroi du récipient (3),
 - un rebord de récipient moleté vers l'extérieur définissant l'extrémité supérieure de la zone de bord supérieur du récipient, et
 - un fond de récipient,
 comprenant en outre une jupe conique externe (2) reliée à la zone de bord supérieur du récipient et s'étendant vers le bas le long de la paroi du récipient (3) avec un espacement entre la jupe externe (2) et la paroi du récipient (3), la jupe externe s'arrêtant au niveau d'un rebord inférieur replié vers l'intérieur (5), **caractérisé en ce que** la jupe externe (2) est plus courte que la hauteur totale de la paroi du récipient (3) et **en ce que** le rebord de jupe replié vers l'intérieur (5) repose contre la paroi du récipient (3) au niveau d'une zone placée à une altitude plus élevée que le fond du récipient, afin d'apporter une différence de hauteur entre la hauteur du fond du récipient et la hauteur du rebord de jupe replié vers l'intérieur (5).
2. Récipient selon la revendication 1, **caractérisé en ce que** la jupe externe (2), à l'endroit où elle est reliée à la région de bord supérieur du récipient, est

en contact avec la paroi du récipient (3) dans une zone rétrécie de façon marquée.

3. Récipient selon la revendication 1, **caractérisé en ce que** la différence de hauteur entre le rebord de jupe replié vers l'intérieur (5) et le fond du récipient est comprise entre 1 et 2 mm. 5
4. Récipient selon la revendication 1, **caractérisé en ce que** la paroi du récipient (3) est prévue avec un jeu à l'intérieur du rebord de jupe replié vers l'intérieur (5). 10
5. Récipient selon la revendication 1, **caractérisé en ce que** l'espacement entre la jupe externe (2) et la paroi du récipient (3) est d'une largeur sensiblement constante ou bien d'une largeur décroissant vers le bas. 15
6. Récipient selon la revendication 1, **caractérisé en ce que** la paroi du récipient (3) est formée avec des moyens de support se projetant vers l'intérieur (6) pour un rebord de jupe respectivement replié vers l'intérieur (5) d'un récipient voisin (1) en situation empilée, les moyens de support (6) étant de manière préférée constitués par une rainure annulaire, et **caractérisé en ce que** les moyens de support (6) sont apportés plus haut à l'intérieur de la paroi du récipient (3) que le niveau où le rebord de jupe replié vers l'intérieur (5) repose contre la paroi du récipient (3) sur le côté externe. 20 25 30
7. Récipient selon la revendication 1, **caractérisé en ce que** le rebord de jupe replié vers l'intérieur (5) a une forme arrondie. 35
8. Récipient selon la revendication 1, **caractérisé en ce que** le rebord de jupe replié vers l'intérieur (5) est aplati afin de conserver une largeur d'espacement d'environ 1,2 mm. 40

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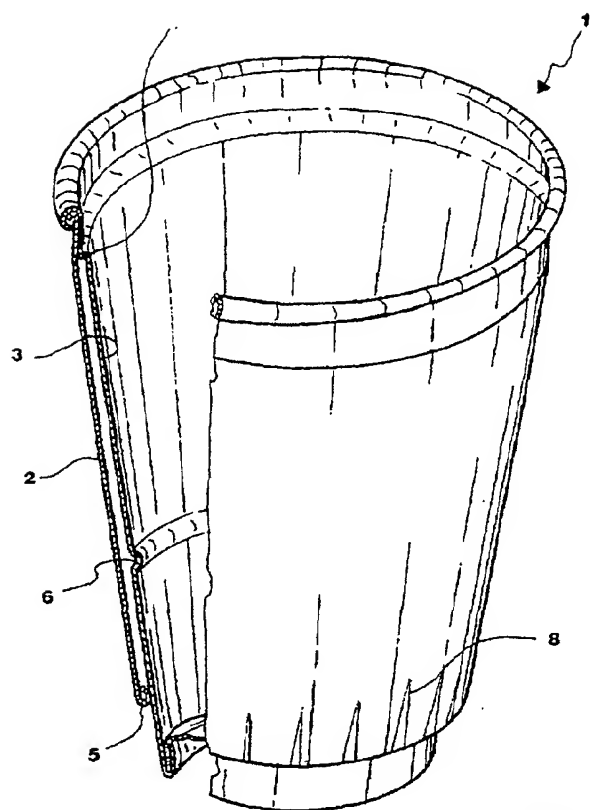


Fig.1

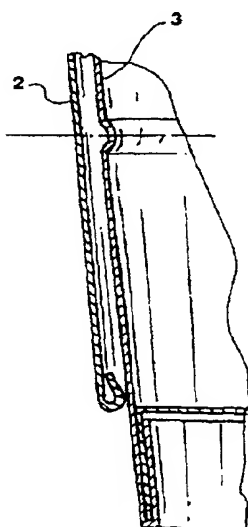


Fig.2a

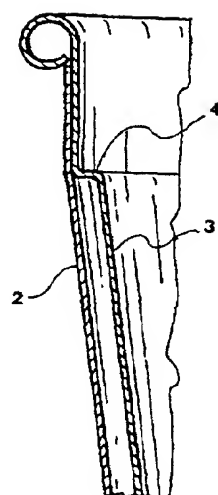


Fig.2b

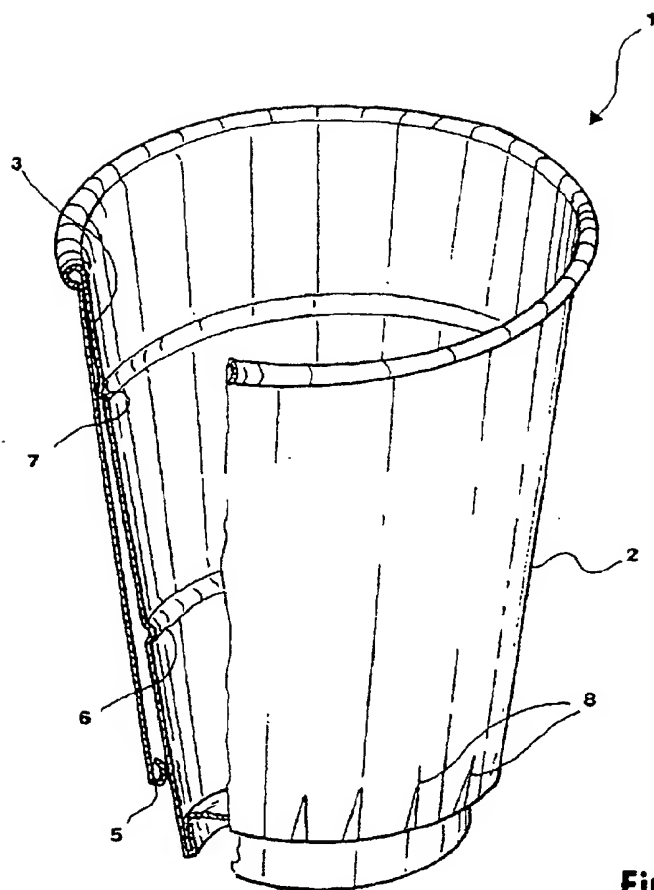


Fig.3

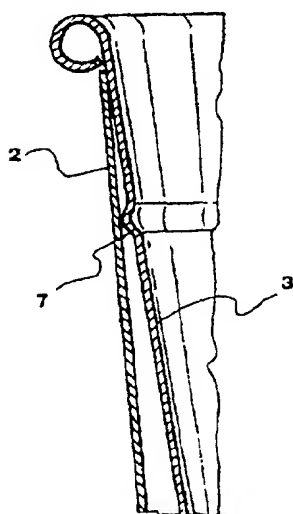


Fig.4

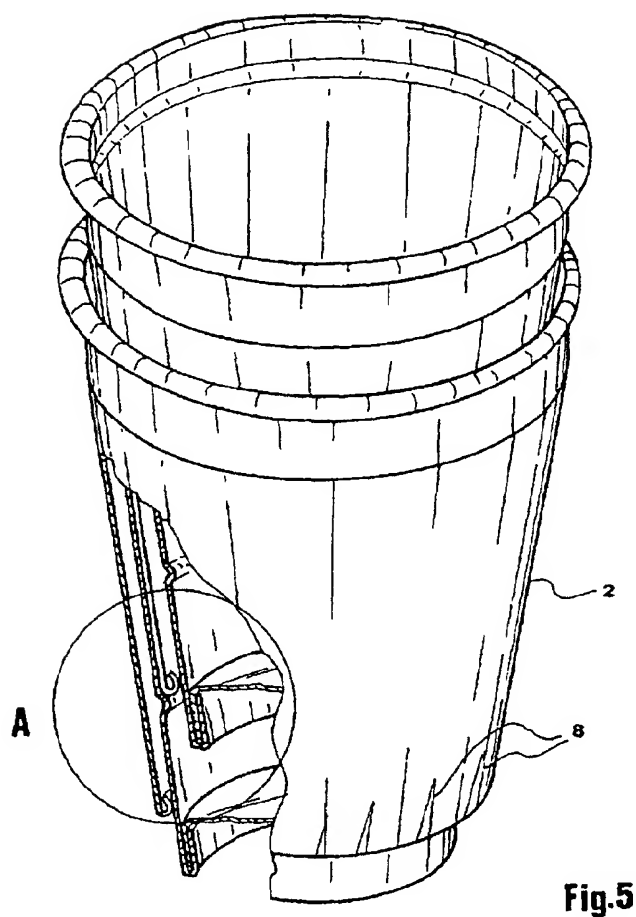


Fig. 5

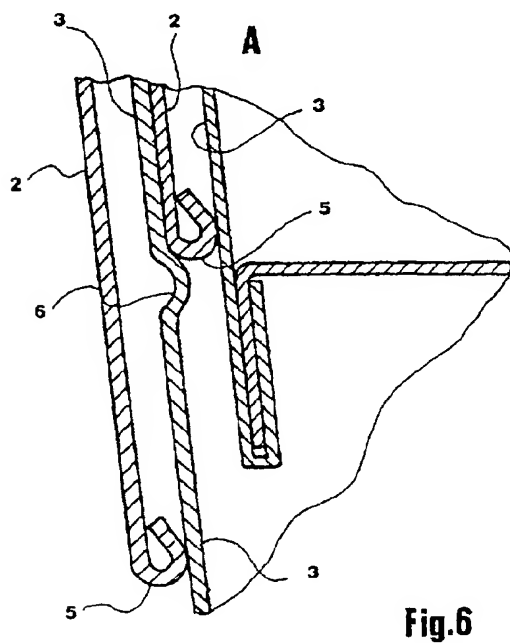


Fig. 6